

**STATE OF ALASKA  
ALASKA CLEAN/DRINKING WATER FUND  
GREEN PROJECT ASSESSMENT FORM**

Under the EPA annual capitalization grants provided to the Alaska Clean/Drinking Water Fund loan programs, it is stated that "To the extent there are sufficiently eligible project applications, not less than 20 percent of the funds appropriated herein for the Revolving (loan) funds shall be for projects to address green infrastructure, water or energy efficiency improvements or other environmentally innovative activities." To meet this condition under the federal grant for administering these funds, this assessment form is provided to document this eligibility or what is termed a "Categorical" or "Business Case" justification, which will be reviewed by DEC for provisional compliance. For more information on green infrastructure development, please review the following EPA web site: [http://cfpub.epa.gov/npdes/home.cfm?program\\_id=298](http://cfpub.epa.gov/npdes/home.cfm?program_id=298)

For those projects requiring a "Business Case," Part 2 will require completion to qualify a "traditional project" as green; justification is broken down into two parts, technical and financial. The technical part should use information from a variety of sources such as maintenance or operation records, engineering studies, project plans or other applicable documentation to identify problems (including any data on water and/or energy inefficiencies) in the existing facility, and that clarifies the technical benefits from the project in water and/or energy efficiency terms. Financial justification needs to show estimated savings to a project based on the technical benefits, and demonstrate that the green component of the project provides a substantial savings and environmental benefit.

For more information and assistance in completing this assessment form, please contact the Municipal Matching Grants & Loans program in Anchorage at 907-269-7673, or in Juneau at 907-465-5300.

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**GENERAL INFORMATION**

Name of Community City and Borough of Sitka

Address 100 Lincoln Street  
Sitka, AK 99835

Contact Name Stephen Weatherman Title Municipal Engineer Telephone (907)747-4042

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**PROJECT INFORMATION**

Project Name Monastery Street Water Main Rehabilitation Location Sitka, AK

Project Type: ☐ New Construction ☒ Upgrades

☐ Stormwater Infrastructure ☒ Energy Efficiency Project

☐ Water Efficiency Project ☐ Innovative Environmental Project

Green Project Description: The existing 6" diameter water main in Monastery and 4" water main in Etolin Way were constructed in the 1960's. The pipe material type is believed to be cast iron pipe (C=80). The new water main will be 8" diameter HDPE pipe (C=155). The new, larger diameter water main will have a lower friction factor, thereby reducing the energy required to move the water through the main.

## PART 1 – GREEN PROJECT CATEGORY & COSTS

Identify the most appropriate "Green" Clean Water or Drinking Water category project type. Note, any selection with (BC) at the end will require a Business Case demonstration.

**ENERGY EFFICIENCY** – the use of improved technologies and practices to reduce the energy consumption of water quality projects.

☐ Wastewater/water utility energy audits      ☐ Clean power for public owned facilities  
☐ Leak detection equipment      ☐ Retrofits/upgrades to pumps & treatment processes (BC)  
☒ Replace/rehabilitation of distribution (BC)      ☐ Other: \_\_\_\_\_ (BC)

**WATER EFFICIENCY** – the use of improved technologies and practices to deliver equal or better services with less water.

☐ Water meters      ☐ Fixture Retrofit      ☐ Landscape/Irrigation  
☐ Graywater or other water recycling      ☐ Replace/rehabilitation of distribution (BC)  
☐ Leak detection equipment      ☐ OTHER: \_\_\_\_\_ (BC)

**GREEN INFRASTRUCTURE** – Practices that manage and treat stormwater and that maintain and restore natural hydrology by infiltrating, evapotranspiring and capturing and using stormwater.

☐ Green Streets      ☐ Water harvesting and reuse  
☐ Porous pavement, bioretention, trees, green roofs, water gardens, constructed wetlands  
☐ Hydromodification for riparian buffers, floodplains, and wetlands  
☐ Downspout disconnection to remove stormwater from combined sewers and storm sewers  
☐ OTHER: \_\_\_\_\_ (BC)

**ENVIRONMENTALLY INNOVATIVE PROJECTS** – Demonstrate new/innovative approaches to managing water resources in a more sustainable way. This may include projects that achieve pollution prevention or pollutant removal with reduced costs and projects that foster adaptation of water protection programs and practices to climate change.

☐ Wetland restoration      ☐ Decentralized wastewater treatment solutions  
☐ Water reuse      ☐ Green stormwater infrastructure      ☐ Water balance approaches  
☐ Adaptation to climate change      ☐ Integrated water resource management  
☐ OTHER: \_\_\_\_\_ (BC)



## PROJECT & GREEN COMPONENT COSTS

	<u>TOTAL PROJECT COSTS</u>	<u>TOTAL "GREEN" COMPONENT COSTS</u>
Administration	\$ 12,000 _____	\$ _____
Legal	\$ _____	\$ _____
Preliminary Studies/Reports	\$ 10,000 _____	\$ _____
Engineering Design	\$ 50,000 _____	\$ _____
Inspection/Surveying/Construction	\$ 40,000 _____	\$ _____
Management		
Construction	\$ 550,000 _____	\$ 78,200 _____
Equipment	\$ _____	\$ _____
Contingencies	\$ 120,000 _____	\$ _____
Other _____	\$ _____	\$ _____
Total Costs	\$ 782,000 _____	\$ _____

## **PART 2 – PROJECT "BUSINESS CASE" TECHNICAL/FINANCIAL ASSESSMENT**

### TECHNICAL ANALYSIS OF BENEFITS\*

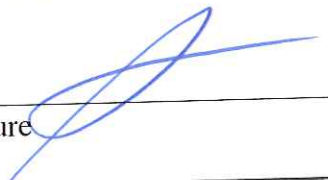
In addition to this form, a supporting technical and financial analysis is required to verify energy and water saving efficiencies for any green component of the project. For green infrastructure and innovative environmental type projects, the analysis should include any applicable efficiency and environmental benefits. For assisting MGL in evaluating "Business Case" assessments of water main, meter, and pump facility replacement type projects, the attached form titled "ADWF - Water/Energy Efficiency Determination - Water Main Replacement/Meter/Pump Facility" is required to be completed. Once the form is complete along with any supporting documentation, please submit documentation to the MGL program for review and concurrence. Note, only water/energy efficiencies that achieve a 20% or greater increase in efficiency will categorically qualify as a Green project.

### CERTIFICATION STATEMENT:

I certify the above information is current and accurate.

STEPHEN WEATHERMAN  
Name

MUNICIPAL ENGINEER  
Title

  
Signature

5/19/11  
Date

Submit Completed Form to:

Alaska Department of Environmental Conservation  
Municipal Matching Grants & Loans  
555 Cordova Street  
Anchorage, AK 99501-2617

## ADWF - Water/Energy Efficiency Determination Water Main Replacement/Meter/Pump Facility

### General Information

Community/System Name	City & Borough of Sitka
Project Name	Monastery Street Water Main Rehabilitation
Estimate Total Cost	\$782,000

### Water Main Replacement

1	Percent loss within the distribution system?	Unknown
2	Water main material & C-values of pipe to be replaced?	4" main Etolin Way and 6" main Monastery Street material type believed to be cast iron (C=80)
3	Water main age?	~50 years (1960's)
4	Approximately what pipe length is to be replaced and what percentage of total distribution mains will the project replace?	1285 LF; 0.6%
5	Number of breaks recorded in past twelve months for the area to be replaced? (based on O&M records)	None
6	Estimated water lost due to breaks and leaks	Unknown
7	Primary reason for breaks?	Same vintage pipe has failed from exterior corrosion and leaking service connections (washed-out copper flares) in other locations.
8	How much of an impact on distribution system water loss is this project expected to have?	Unknown; This project will help avoid inevitable main failure due to age of pipe.
9	Are there other efficiencies to be gained by the replacement? (i.e. reduced head and therefore less energy loss in an upstream pump station, etc.)	The new water main will be 8" HDPE. Replacing the older, smaller CI pipe will reduce the energy required to move the water through the main.

### Meter Installation/Replacement

10	Is meter installation/replacement part of this project?	
11	Reason for replacement?	
12	If so, estimated cost of meter installation/replacement?	

**Pump Facilities**

13	Are pumps or pumping facilities part of the project?	
14	Age of existing pumps or pumping facilities?	
15	Existing pump/motor efficiency rating, if known?	
16	New pump/motor efficiency rating.	
17	List the manufacture, make, and model of key components (motors, pumps, etc.)	
18	Document that the energy efficiency specifications for the proposed equipment demonstrate substantial savings over other currently available equipment	

**Information Provided by:**

Name and Title of persons providing above information?	Dan Tadic, PE Senior Engineer Mark Buggins, Environmental Superintendant
Affiliation?	City and Borough of Sitka
Address (both mailing & location if different)?	100 Lincoln Street, Sitka, AK 99835 100 Alice Loop, Sitka, AK 99835
Contact Phone Number?	(907) 747-1807 (907) 966-2256
E-Mail Address	<a href="mailto:dantadic@cityofsitka.com">dantadic@cityofsitka.com</a> <a href="mailto:markb@cityofsitka.com">markb@cityofsitka.com</a>



## Notes for completing the Water/Energy Efficiency Determination

1	Percent loss within the distribution system?	Determine from information in surveys or obtain from water system. If cannot be calculated due to lack of meters or other reason note as unknown.
2	Water main material/C-values of pipe to be replaced?	Based on project description or plans.
3	Water main age?	Age alone does not make a project green but may be used for supporting information for an overall case.
4	Approximately what pipe length is to be replaced and what percentage of total distribution mains will the project replace?	This information used to determine impact of project on line 8
5	Number of breaks recorded in past twelve months for the area to be replaced (based on O&M records)?	Water system will need to document the number of breaks through O&M reports.
6	Estimated water lost due to breaks and leaks	Estimated water loss will need to be provided by operators. May be determined from water tower level drop or booster station run time increases, etc. for major breaks
7	Primary reason for breaks?	Reasons alone does not make a project green but may be used for supporting information for an overall case.
8	How much of an impact on distribution system water loss is this project expected to have?	Line 1 - (ADD X line 1 – line 6)/ADD=overall water loss decrease. OR Total volume water saved on an annual basis.
9	Are there other efficiencies to be gained by the replacement?	Reduced head and therefore less energy loss in an upstream pump station, or few hours (estimate number) of pumps will need to operate to supply demand, etc.

### Meter Installation/Replacement

10	Is meter installation/replacement part of this project?	
11	Reason for replacement?	Replacement due to inefficient/inaccurate meters qualify however replacement for remote read alone wouldn't.
12	If so, estimated cost of meter installation/replacement?	

### Pump Facilities

13	Are pumps or pumping facilities part of the project?	If so note if a new facility or a replacement
14	Age of existing pumps or pumping facilities?	
15	Existing pump/motor efficiency rating, if known?	$\text{HP} = \frac{\text{Head (ft.)} \times \text{Capacity (gpm)}}{3956 \times \text{Efficiency}}$ (Head X Capacity X 8.34 / 3956)/HP needed based on pump curve X motor efficiency (if unk. use 0.85) X100% Head (ft.) = (psi out – psi in)/2.31 Capacity = actual output in gpm HP = Horsepower
16	New pump/motor efficiency rating.	Best if provided by engineer or a similar Calc. can be used as in line 15.
17	List the manufacture, make, and model of key components (motors, pumps, etc.)	
18	Document that the energy efficiency specifications for the proposed equipment demonstrate substantial savings over other currently available equipment	Energy efficiency should not be established by simply comparing the new equipment to equipment being replaced, since any replacement equipment would be expected to be more efficient than existing equipment.